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**RESEARCH
NOTES:**

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COORDINATION OF COMMERCIAL VEHICLE DATA COLLECTED BY AUTOMATIC TRAFFIC COUNTER (ATC) AND WEIGH-IN-MOTION (WIM)

Background

Two primary factors drive the need for effective handling of commercial vehicle data. The first involves the impact of overweight vehicles on the state's roadways and the use of state funds to support our aging highway infrastructure. The second factor involves the state's obligation to meet federal traffic data reporting requirements.

The state of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These collections include gasoline and use fuel taxes, motor carrier taxes, vehicle license taxes, motor vehicle registration fees, and other miscellaneous fees. These revenues are deposited in the Arizona Highway User Revenue Fund (HURF) and are then distributed to cities, towns, and counties and to the State Highway Fund. These taxes represent the primary source of revenues

available to the state for highway construction and improvements and other related expenses.

It has been claimed that overweight commercial vehicles are the primary cause of state highways failing to meet their expected or designed life span. If this is true, millions of dollars in damage that must be funded from HURF and other sources is being unnecessarily expended on replacement of existing highways prematurely aged by overweight vehicles. The Arizona Department of Transportation (AzDOT) has primary responsibility for enforcement of laws regulating commercial vehicle size and weight limits. Consequently, it is essential that AzDOT have an effective system for intra-agency sharing of the data that it collects at automatic traffic counter (ATC) and weigh-in-motion (WIM) sites throughout the state.

In addition to size and weight enforcement, the *Federal-Aid Policy Guide*

established by the Federal Highway Administration (FHWA) mandates “requirements for development, establishment, implementation, and continued operation of a traffic monitoring system for highways and public transportation facilities and equipment in each State.” Subchapter F of the *Federal-Aid Policy Guide* outlines general requirement for compliance with this policy. States must comply with these requirements when...

- Traffic data are used in support of studies or systems which are the responsibility of the U.S. Department of Transportation;
- Collection of traffic data is supported by the use of federal funds;
- Traffic data are used in the apportionment or allocation of federal funds;
- Traffic data are used in design or construction of an FHWA funded project; or
- Traffic data are required as part of a federally mandated program.

A state’s traffic monitoring procedures also apply to the “activities of local governments and other public or private non-state government entities collecting highway traffic data within the state” if the data are used for any of the purposes described above. States are required to record traffic volumes, vehicle classification, and vehicle weight data as part of their traffic monitoring system. The collection of this data for selected areas of the state is delegated to public or private non-state government agencies outside of AzDOT. Therefore, the sharing of data between AzDOT and outside entities is crucial to AzDOT meeting obligations of the *Federal Aid Policy Guide*.

In addition, *Federal-Aid Policy Guide* Subchapter G, Part 657, Certification of Size and Weight Enforcement, requires that “each State enforce vehicle size and weight laws to assure that violations are discouraged and that vehicles traversing the highway system do not exceed the limits specified by law. These size and weight limits are based upon design specifications and safety considerations, and enforcement shall be developed and maintained both to prevent premature deterioration of the highway pavement and structures that provide a safe driving environment.” The purpose of the regulation is to “prescribe requirements for administering a program of vehicle size and weight enforcement on Federal Aid highways including the required annual certification by the State.” The program shall describe the procedures, resources, and facilities which the State intends to devote to the enforcement of vehicle size and weight laws.” Each State is required to submit its enforcement plan or an annual update by July 1 of each year. Failure to comply with these requirements can result in loss of Federal-Aid highway funds apportioned to the State for the next fiscal year.

Effective enforcement of laws regulating commercial vehicle size and weight limits is dependent on the availability as well as accuracy of ATC and WIM data from sites throughout the state. These data also are needed for meeting federal reporting requirements. Therefore, dissemination of accurate and reliable commercial vehicle count, class and weight data is an essential element to maintaining the integrity of the state’s highway infrastructure.

Approach & Findings

The methodology employed three lines of inquiry. The findings for each were as follows:

Literature Review:

- Enforcement of size and weight restrictions is essential to preserving highway infrastructure.
- There is an absence of best practices in the area of coordination of commercial vehicle data.
- Success is contingent of inter- and intra-agency cooperation among data collection groups.
- Obstacles appear to be lack of funding, data quality, timeliness of delivery, and incompatible data formats.
- Data partnering amongst state agencies, metropolitan planning organizations (MPOs), and local governments offers opportunities for cost sharing and resource conservation but will be contingent on effective use of data management systems.
- Department of transportation priorities have shifted toward intelligent transportation systems (ITS) and ATMS – neither of which are involving commercial vehicle data handling.

Survey of State Practices:

- Among those participating in the survey, data collection is centralized within one or two departments within an agency, typically the Planning Division and/or Traffic Engineering Unit.
- Commercial vehicle data are shared with three or more departments.
- Data collection is typically part of a permanent program using permanent data collection sites supplemented by portable equipment.

- No apparent method of operation consistently led to an “effective” or “very effective” self-rating.
- The primary use of commercial vehicle data is to meet federal reporting requirements with limited use of the data for size and weight enforcement.

AzDOT Needs Assessment:

- The lack of data for use in size and weight enforcement was identified as the primary obstacle that needed to be overcome.
- Data collection is decentralized with lack of coordination and communication between departments responsible for collecting the data.
- There is a lack of functional data collection equipment and a limited number of weigh-in-motion devices located strategically along state highways.
- There is lack of standardization of data formats and limited accessibility to data across departments.
- Absence of a comprehensive data management system for storage and retrieval of traffic data by all stakeholders in AzDOT limits system effectiveness.

Recommendations

Recommendations to remedy the situation are two-fold, calling for both procedural change and the allocation of funding to support the change. Of primary importance is the need for long-range planning that will ensure commercial vehicle data collection and dissemination is a priority across AzDOT departments. An intra-agency task force that includes representatives from each of the stakeholder

groups can be used to re-think current practices. Policies and procedures should be established so as to address the requirements of each department as well as meet AzDOT's federal and state data reporting commitments. Some issues to target include establishing consistent standards of practice relative to data collection, storage, and exchange.

Accomplishing goals and objectives established through long-range planning will require funding. Formation of data partnerships may provide some cost savings and resource conservation. Repair and/or replacement of non-functional traffic recorders and installation of additional weigh-in-motion devices will be a

significant expense. However, this must be a priority, as no amount of procedural change will produce accurate data when recording equipment is faulty. The initial outlay of funds for new WIM devices may be costly but will support better enforcement of size and weight restrictions. This in turn will reduce expenditures for highway maintenance and diminish premature wear of state highways.

The state of Arizona cannot afford to postpone development of a multifaceted commercial vehicle data-handling program, as it is likely the consequences of inaction will outweigh the cost of implementing such a program.

The full *Coordination of Commercial Vehicle Data Collected by Automatic Traffic Counter (ATC) and Weigh-In-Motion (WIM)* by Sherry L. Skszek, 505 N. Tanque Verde Loop Rd., Tucson, AZ 85748 (Arizona Department of Transportation, report number FHWA-AZ-03-526, published April 2003) is available from the Arizona Transportation Research Center, 206 S. 17 Ave., mail drop 075R, Phoenix, AZ 85007; phone 602-712-3138.